

## CLAIMS

What is claimed is:

1. A method of improving fault-based multi-page pre-  
5 fetches comprising the steps of:  
  
determining, upon receiving a request to read data  
randomly from a file, whether previous data has been  
read from memory or from a storage device, the request  
10 including a range of data to be read, the range of data  
spanning more than one page; and  
  
attempting to read the data from memory if previous  
data has been read from memory or using the range to  
15 read the data all at once from the storage device if  
previous data has been read from the storage device.
2. The method of Claim 1 wherein if the data fails to be  
in memory during the read attempt, the range is used to  
20 fetch the data all at once into the memory using a page  
fault.
3. The method of Claim 2 wherein when a file is opened, it  
is assigned a value, the value for facilitating the  
25 determining step.
4. The method of Claim 3 wherein if it is determined that  
previous data was read from memory, the value is  
increased by an award if the requested data is in  
30 memory.

5. The method of Claim 4 wherein if it is determined that previous data was read from memory, the value is decreased by a penalty if the requested data is not in memory.
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6. The method of Claim 5 wherein if it is determined that previous data was read from the storage device, the value is increased by the award.
- 10 7. The method of Claim 6 wherein the penalty is larger than the award.
8. A computer program product on a computer readable medium for improving fault-based multi-page pre-fetches comprising:
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- code means for determining, upon receiving a request to read data randomly from a file, whether previous data has been read from memory or from a storage device, the request including a range of data to be read, the range of data spanning more than one memory page; and
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- code means for attempting to read the data from memory if previous data has been read from memory or for using the range to read the data all at once from the storage device if previous data has been read from the storage device.
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9. The computer program product of Claim 8 wherein if the data fails to be in memory during the read attempt, the range is used to fetch the data all at once into the memory using a page fault.
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10. The computer program product of Claim 9 wherein when a file is opened, it is assigned a value, the value for facilitating the determining code means.

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11. The computer program product of Claim 10 wherein if it is determined that previous data was read from memory, the value is increased by an award if the requested data is in memory.

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12. The computer program product of Claim 11 wherein if it is determined that previous data read was from memory, the value is decreased by a penalty if the requested data is not in memory.

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13. The computer program product of Claim 12 wherein if it is determined that previous data was read from the storage device, the value is increased by the award.

20 14. The computer program product of Claim 13 wherein the penalty is larger than the award.

15. A computer system comprising:

25 at least one storage device for storing code data; and

at least one processor for processing the code data to determine, upon receiving a request to read data randomly from a file, whether previous data has been  
30 read from memory or from the storage device, the request including a range of data to be read, the range of data spanning more than one memory page and for

attempting to read the data from memory if previous data has been read from memory or using the range to read the data all at once from the storage device if previous data has been read from the storage device.

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16. The computer system of Claim 15 wherein if the data fails to be in memory during the read attempt, the range is used to fetch the data all at once into memory using a page fault.

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17. The computer system of Claim 16 wherein when a file is opened, it is assigned a value, the value for determining whether data has been read from memory or from the storage device.

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18. The computer system of Claim 17 wherein if it is determined that previous data was read from memory, the value is increased by an award if the requested data is in memory.

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19. The computer system of Claim 18 wherein if it is determined that previous data was read from memory, the value is decreased by a penalty if the requested data is not in memory.

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20. The computer system of Claim 19 wherein if it is determined that previous data was read from the storage device, the value is increased by the award.

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